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TF1.4 Seasonal Floodplain Marshes

D. A. Keith

R. T. Kingsford

R. Mac Nally

B. J. Robson

C. A. Catford

See next page for additional authors

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Authors

D. A. Keith, R. T. Kingsford, R. Mac Nally, B. J. Robson, C. A. Catford, Mark C. Rains, K. Irvine, K. M. Rodriguez-Clark, and A. Etter



The Pantanal, Brazil.
Source: Richard Kingsford

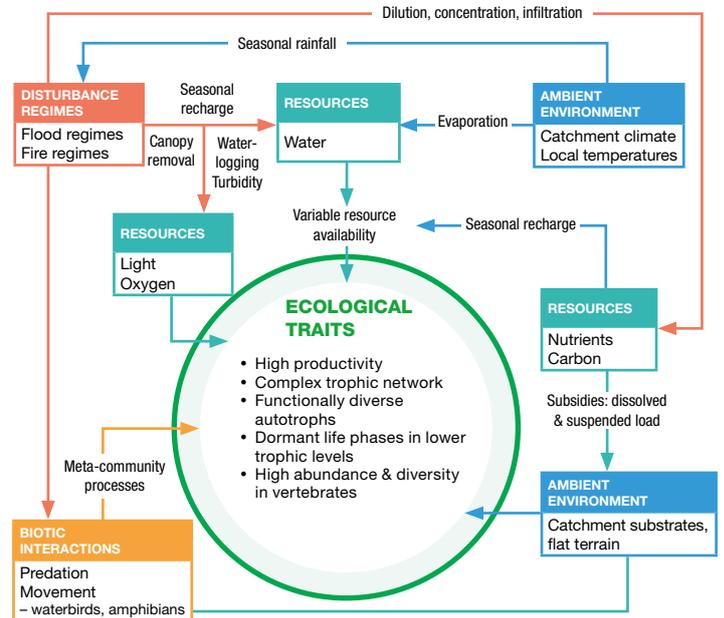
TF1.4 Seasonal floodplain marshes

BIOME: TF1 PALUSTRINE WETLANDS
REALM: TRANSITIONAL FRESHWATER-TERRESTRIAL

Contributors: D.A. Keith, R.T. Kingsford, R. Mac Nally, B.J. Robson, J.A. Catford, M.C. Rains, K. Irvine, K.M. Rodriguez-Clark, A. Etter

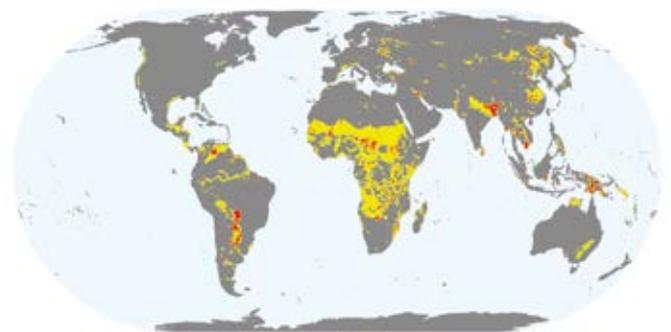
ECOLOGICAL TRAITS: This group includes high-productivity floodplain wetlands fed regularly by large inputs of allochthonous resources that drive strong bottom-up regulation, and smaller areas of disconnected oligotrophic wetlands. Functionally diverse autotrophs include phytoplankton, algal mats and epiphytes, floating and amphibious herbs and graminoids, and semi-terrestrial woody plants. Interactions of fine-scale spatial gradients in anoxia and desiccation are related to differential flooding. These gradients shape ecosystem assembly by enabling species with diverse life-history traits to exploit different niches, resulting in strong local zonation of vegetation and high patch-level diversity of habitats for consumers. Wetland mosaics include very productive and often extensive grasses, sedges and forbs (sedges dominate oligotrophic systems) that persist through dry seasons largely as dormant seeds or subterranean organs as well as groves of woody perennials that are less tolerant of prolonged anoxia but access ground water or arrest growth during dry phases. Productive and functionally diverse autotrophs support complex trophic networks with zooplankton, aquatic invertebrates, fish, amphibians, reptiles, aquatic mammals, waterbirds, and terrestrial animals with diverse dietary and foraging strategies. During dry phases, obligate aquatic organisms are confined to wet refugia. Others, including many invertebrates, have dormancy traits allowing persistence during dry phases. Very high abundances and diversities of invertebrates, waterbirds, reptiles, and mammals exploit resource availability, particularly when prey are concentrated during drawdown phases of floods. Reproduction and recruitment, especially of fish, coincide with food availability cued by flood regimes.

KEY ECOLOGICAL DRIVERS: Regular seasonal flooding and drying is driven by river flow regimes, reflecting seasonal precipitation or melt patterns in catchments. Salinity gradients and tides influence these marshes where they adjoin estuaries, with brackish marshes on transitions to TF1.2, TF1.3 and MFT1.3. Disconnected oligotrophic systems rely on rainfall and low substrate permeability for seasonal waterlogging. Seasonal



flood extent and duration vary inter-annually, especially in temperate zones. Geomorphic heterogeneity in the depositional floodplains promote spatial and temporal variability in moisture status, creating contrasting patches, including perennially inundated refuges and dry 'islands' that seldom flood and dry rapidly. Substrates are fertile alluvia or infertile white sands with variable grain sizes, moisture, and organic content that reflect fine-scale depositional patterns and hydrological gradients. Fires may occur in dry seasons, releasing resources, changing vegetation structure and composition, consuming organic substrates and lowering the wetland surface.

DISTRIBUTION: Throughout the seasonal tropics and subhumid temperate regions of the world.



Reference:

Damasceno-Junior, G.A., Semir, J., Dos Santos, F.A.M., de Freitas Leitão-Filho, H. (2005). 'Structure, distribution of species and inundation in a riparian forest of Rio Paraguai, Pantanal, Brazil'. *Flora-Morphology, Distribution, Functional Ecology of Plants* 200(2): 119–135.